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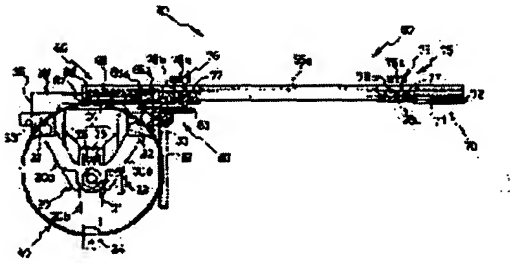
(54) HAT FRAME DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a hat frame device capable of enlarging the maximum turning angle of a turning frame.
SOLUTION: In this hat frame device, wires extending from the side of a turning frame 40 are respectively laid along the under side of a connecting plate 66 to outside ends 67 and 72 of the left side, both ends of the wires are respectively fixed to a fixing spot on the upper surface of a connecting piece 68 and a connecting spot on the upper surface of a connecting plate 70 by bending toward the upper surface side in a U shape at the outer ends 67 and 72. The maximum turning angle of a turning frame 40 is enlarged as a cloth- carrying frame can be moved to left or right until the outer ends 67 and 72 of the connecting plate 66 locate around the upper end of the turning frame 67.



LEGAL STATUS

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CLAIMS

[Claim(s)]
[Claim 1] The base frame attached near the cylinder bed of embroidery sewing equipment free [movement in the length direction of a cylinder bed]. The rotation frame with which it is supported by the base frame free [rotation] and it is equipped with a hat frame removable. The wire twisted around the rotation frame. the connection which has one pair of wire connection sections which are fixed to a cloth conveyance frame removable and connect a part for the both ends of a wire, respectively to both ends -- a member It is hat frame equipment equipped with the above, and is characterized by ****(ing) the wire prolonged from the aforementioned rotation frame side to a rotation frame and the outside edge of an opposite side along with each wire connection section bottom.
[Claim 2] The wire ****(ed) to the outside edge of the aforementioned wire connection section is hat frame equipment according to claim 1 characterized by having been crooked to the upper surface side in the shape of U-turn at the outside edge, and fixing the edge of the aforementioned wire to the wire fixed part by the side of the upper surface of the wire connection section.
[Claim 3] One wire fixed part of the one aforementioned pair of wire connection sections is hat frame equipment according to claim 2 characterized by being constituted by the wire possible [grant of tension].

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to what was constituted so that the embroidery field which can carry out embroidery sewing to a hat especially could be expanded about the hat frame equipment which equips embroidery sewing equipment and can embroider.
[0002]
[Description of the Prior Art] The cloth conveyance frame by which a move drive is carried out independently of the direction of X (longitudinal direction) and the direction (cross direction) of Y in which two or more embroidery sewing machines, the cylinder bed of these embroidery sewing machine, and multi-head type embroidery sewing equipment cross at right angles, While it has the embroidery frame which is attached in this cloth conveyance frame free [attachment and detachment], and can set embroidered cloth possible [embroidery sewing], each of two or more embroidery sewing machines of multi-head type embroidery sewing equipment is equipped removable, and practical use is variously presented with the hat frame equipment for embroidering.
[0003] Common hat frame equipment consists of rotation mechanisms change into rotation of a rotation frame the directional movement X of the base frame attached near the cylinder bed of an embroidery sewing machine free [movement in the direction of Y], the rotation frame supported by the base frame free [rotation] with the direction of Y at the circumference of an parallel shaft, the hat frame with which it is equipped free [attachment and detachment on a rotation frame] and which can set a hat possible, and a cloth conveyance frame etc. (for example, refer to JP,8-232158,A A base frame is connected with a cloth conveyance frame through a connection mechanism, and the move drive of a base frame and the rotation frame is carried out in the direction of Y with a cloth conveyance frame.
[0004] In the aforementioned rotation mechanism, if it has the connecting plate of one pair of right and left fixed to a cloth conveyance frame possible [fixed release], the connection rod which connects both [these] connecting plates, and the wire by which it was twisted around the rotation frame and both ends were connected with the one aforementioned pair of connecting plates, respectively and the move drive of one pair of connecting plates is carried out in the direction of X with a cloth conveyance frame, the rotation frame and hat frame with which the wire was twisted will rotate. The wire twisted around the rotation frame is prolonged from the upper-limit section of a rotation frame to each connecting plate, and the edge of a wire is being fixed to the undersurface section of a connecting plate on the screw etc.
[0005] By the way, when equipping multi-head type embroidery sewing equipment with two or more hat frame equipments, since the distance between heads of multi-head type embroidery sewing equipment (distance between cylinder beds) is set as predetermined distance (for example, about 600mm), one pair of connecting plates of each hat frame equipment are fixed to a cloth conveyance frame so that it may not interfere with the connecting plate of ****** hat frame equipment. Although the move drive of the cloth conveyance frame is carried out in the direction of X and a rotation frame rotates through a rotation mechanism in the state where of the upper-limit section of a rotation frame is located among the both ends of the wire fixed to one pair of connecting plates in each hat frame

equipment, the size of the embroidery field which can carry out embroidery sewing to a hat is decided by the moving range to the direction of X of the maximum rotation angle of a rotation frame, i.e., a cloth conveyance frame.
[0006]
[Problem(s) to be Solved by the Invention] Although the interval of one pair of connecting plates of each hat frame equipment is restricted when equipping multi-head type embroidery sewing equipment with two or more hat frame equipments When connecting with the section the edge of the wire prolonged from the upper-limit section of a rotation frame in the middle of the upper surface section of a connecting plate When connecting the edge of a wire with the section in the middle of the inferior-surface-of-tongue section of a connecting plate, a wire is not prolonged to the rotation frame of a connecting plate, and the edge of an opposite side in the inferior-surface-of-tongue side of a connecting plate, but the maximum rotation angle of a rotation frame becomes small.
[0007] That is, as shown in drawing 9 , a cloth conveyance frame is moved to a left or the method of the right, and it is the rotation frame 101. It is one connecting plate 102 to the upper-limit section. When carrying out the maximum approach, Rotation frame 101 The upper-limit section to connecting plate 102 For the distance to an edge, in order that only A (A is about 3-5cm) may remain, only distance A minutes are the rotation frame 101. On the other hand, the maximum rotation angle to ** becomes small, and only the part by which the width of face of the maximum embroidery pattern which can be embroidered is equivalent to 2A becomes small. The purpose of this invention is offering the embroidery frame equipment which can enlarge the maximum rotation angle of a rotation frame.
[0008]
[Means for Solving the Problem] The base frame with which the hat frame equipment of a claim 1 is attached near the cylinder bed of embroidery sewing equipment free [movement in the length direction of a cylinder bed], The rotation frame with which it is supported by the base frame free [rotation] and it is equipped with a hat frame removable, In hat frame equipment equipped with the connection member which has one pair of wire connection sections which are fixed to a cloth conveyance frame removable and connect a part for the both ends of a wire with the wire twisted around the rotation frame, respectively to both ends The wire prolonged from the rotation frame side is ****(ed) to a rotation frame and the outside edge of an opposite side along with each wire connection section bottom.
[0009] If the move drive of one pair of wire connection sections is carried out in the direction of X with a cloth conveyance frame, the rotation frame around which the wire was twisted will rotate. A cloth conveyance frame can be moved to a left or the method of the right until the outside edge of one wire connection section is located near the upper-limit section of a rotation frame, since the wire prolonged from the rotation frame side is ****(ed) to the rotation frame and the outside edge of an opposite side along with each wire connection section bottom. So, the maximum rotation angle of a rotation frame becomes large, and the width of face of the maximum embroidery pattern which can be embroidered also becomes large.
[0010] The wire by which the hat frame equipment of a claim 2 was ****(ed) to the outside edge of the aforementioned wire connection section in invention of a claim 1 is crooked to an upper surface side in the shape of U-turn at the outside edge, and is characterized by fixing the edge of the aforementioned wire to the wire fixed part by the side of the upper surface of the wire connection section. So, while the edge of a wire is simply and certainly fixable to the wire connection section, each wire can be certainly ****(ed) to an outside edge along with the wire connection section bottom. In addition, the same operation as a claim 1 is done so.
[0011] The hat frame equipment of a claim 3 is characterized by one wire fixed part of the one aforementioned pair of wire connection sections being constituted by the wire possible [grant of tension] in invention of a claim 2. By giving tension to a wire by one wire fixed part, a synchronous gap of the rotation of a rotation frame to X directional movement of a cloth conveyance frame can be prevented certainly. In addition, the same operation as a claim 3 is done so.
[0012]
[Embodiments of the Invention] Hereafter, the form of operation of this invention is explained based on

a drawing. This operation form is an example at the time of applying this invention to each of two or more hat frame equipments with which multi-head type embroidery sewing equipment is equipped removable and which carry out embroidery sewing of two or more hats at once. As shown in drawing 1 , multi-head type embroidery equipment SM has the sewing-machine support plate 2 of the shape of an abbreviation rectangle prolonged in the direction of X arranged in the rear side of the upper surface of the embroidery machine base frame 1 prolonged in the direction of X (longitudinal direction), and the embroidery machine base frame 1, and three multi-needle type embroidery sewing machines M1-M3 of the same structure are installed in the direction of X on the sewing-machine support plate 2.
[0013] In each of these embroidery sewing machines M1-M3, the needle-bar case 7 which supports 12 needle bars and 12 balances 9 possible [vertical movement] is supported by the front end section of the arm section 3 possible [movement in the direction of X]. The bed book soma 5 which the pedestal section 4 stands in a row in the arm section 3, and stands in a row in the soffit section of the pedestal section 4 on the other hand is fixed on the sewing-machine support plate 2, the cylinder bed 6 is ahead prolonged from the front end section of the bed book soma 5, and the **** capture machine etc. is formed in the point (front end section) of the cylinder bed 6.
[0014] A sewing needle 8 is attached in the soffit section of the needle bar of each needle-bar case 7, and the embroidery thread of 12 colors is supplied to 12 sewing needles 8 from 12 ****** 11 of ****** 10, respectively. If one of the needle bars is chosen by moving the needle-bar case 7 in the direction of X, and switching one desired sewing needle 8 to the sewing position which counters the pinholing 12 of the point of the cylinder bed 6 Only the balance 9 connected with the needle bar and it drives up and down, and an embroidery blind stitch is formed by the embroidery thread of the color chosen by collaboration with the sewing needle 8 of the needle bar, and a **** capture machine. The arm shaft horizontal which moves the aforementioned needle bar and a balance 9 up and down, and the lower shaft which rotates a **** capture machine are driven by the driving shaft 18 by which a rotation drive is carried out with V belt 17 connected with the sewing-machine motor.
[0015] The table 13 for work which can go up to the same height as the upper surface of the cylinder bed 6 is arranged in the anterior of the sewing-machine support plate 2. One pair of auxiliary tables 14 and 15 are formed in the right-and-left both sides of the table 13 for work. Installation support of the drive frame parts 16a and 16b for both ends of the long cloth conveyance frame 16 is carried out in the direction of X at the auxiliary tables 14 and 15. The move drive of the right-hand side drive frame part 16a is carried out in the direction of X by the direction drive of X (illustration abbreviation), and the move drive of left-hand side drive frame part 16b and the right-hand side drive frame part 16a is carried out in the direction of Y by the direction drive (illustration abbreviation) of Y.
[0016] The hat frame equipment 20 attached in each embroidery sewing machines M1-M3 is explained. As shown in drawing 2 - drawing 6 , hat frame equipment 20 In the cloth conveyance frame 16 bottom The rotation frame 40 and the rotation frame 40 which are supported free [rotation] with the direction of Y by the rotation regulation mechanism 24 and the base frame 30 which regulate rotation of the base frame 30 attached in the guidance shaft 21 and the guidance shaft 21 which are prolonged in the direction of Y free [movement in the direction of Y], and the base frame 30 at the circumference of an parallel shaft It consists of hat frame 90 grades with which the rotation mechanism 50 to rotate, the connection mechanism 80 which connects the base frame 30 with the cloth conveyance frame 16 in operation, and the rotation frame 40 are equipped free [attachment and detachment].
[0017] The level wearing hole 22 of the direction sense of Y formed in the bed book soma 5 by the side of the end face of the cylinder bed 6 is equipped with the aforementioned guidance shaft 21 freer [attachment and detachment] than the front, and it is fixed to the bed book soma 5 possible [fixed release] by the fastener 23. one pair of rollers which the pivotable support cylinder part 31 attached outside free [sliding of the guidance shaft 21] by the lower part of the base frame 30 and three arms 30a, 30a, and 30b which make front view Y type on the base frame 30 are formed, and support the rotation frame 40 free [rotation] from the inside and an outside at one pair of upper upper-limit sections of each of arm 30a -- members 32 and 33 are formed however, an outside roller -- a member 33 -- an eccentric mechanism -- minding -- an inside roller -- centering control is possible to radial to a member

32
[0018] the key which will be prolonged in the direction of Y in the undersurface of the cylinder bed 6 if the rotation regulation mechanism 24 is explained -- a member 25 is fixed -- having -- the base frame 30 -- a key -- the quirk which engages with a member 25 free, and regulates rotation of the base frame 30 -- a member 26 is fixed, and a base frame 30 is regulated so that it may not rotate to the circumference of a shaft parallel to the direction of Y, and it is freely movable only in
[0019] The rotation frame 40 is explained. the rotation frame 40 -- a cross section -- the hat frame supporter 42 of a cross-section semicircle arc prolonged in predetermined length prepares in the front from the circular annular section 41 and the Johan section of the annular section 41 -- having -- the periphery section of the annular section 41 -- a roller -- the roller slot 43 which a member 33 fits in and rolls, and the wire guide rail 44 which draws the wire 51 of the rotation mechanism 50 are formed The bottom of the center of the annular section 41 engages with the guide section 34 of the soffit of bottom arm 30b of the base frame 30 free [sliding], and is shown, and by the spring member, four engagement rollers 45 which engage with the engagement hole of the hat frame 90 with which the hat frame supporter 42 is equipped in the shape of outside attachment, and hold the hat frame 90 free on the rotation frame 40 carry out elastic energization, and are formed in the periphery section of the annular section 41.
[0020] Next, the rotation mechanism 50 is explained. The rotation mechanism 50 is a mechanism in which X directional movement of the cloth conveyance frame 16 is changed into rotation of the rotation frame 40. The wire 51 twisted around the rotation frame 40, and the holddown member 52 long and slender in the direction of X fixed to the cloth conveyance frame 16 possible [fixed release], The movable member 55 long and slender in the direction of X which has the wire connection sections 65 and 70 which relative displacement to the direction of X is possible, and connect a part for the both ends of the aforementioned wire 51 to the base frame 30, respectively to both ends, It consists of connection mechanism 75 grades for adjustment which connect the movable member 55 possible [adjustment of the direction position of X] to a holddown member 52. In addition, a holddown member 52 and the movable member 55 are equivalent to a connection member.
[0021] One pair of connection holes 53 are formed in each of the direction both ends of X of a holddown member 52, it is in the state where the undersurface of a holddown member 52 was made to contact direction frame part of X 16c, the screw member with a knob (illustration abbreviation) made to insert in one pair of connection holes 53 is screwed on direction frame part of X 16c, and a holddown member 52 is concluded by direction frame part of X 16c. The movable member 55 is formed in the anterior of the horizontal plate section 56 which contacts a holddown member 52, and the horizontal plate section 56 in one, and has the engagement section 57 with which the upper-limit flection 36 of the connecting plate 35 fixed to the base frame 30 engages.
[0022] The horizontal plate section 56 has the length of the direction of X shorter than a holddown member 52, and has contacted in addition to the both-ends part in which the aforementioned connection hole 53 of a holddown member 52 was formed. The engagement section 57 has the perpendicular section 58 prolonged upwards from the front end section of the horizontal plate section 56, the top horizontal level 59 prolonged from the upper limit of the perpendicular section 58 to the front, the perpendicular section 60 prolonged from the front end of the top horizontal level 59 to a lower part, and the bottom horizontal level 61 prolonged from the soffit of the perpendicular section 60 to back.
[0023] The bottom horizontal level 61 is shorter than the top horizontal level 59, the connecting plate 35 prolonged upwards from the base frame 30 between the back end section of the bottom horizontal level 61, a holddown member 52, and the front end section of the perpendicular section 58 is inserted, and the flection 36 crooked from the upper limit of a connecting plate 35 to the front is engaging with the engagement section 57. So, even if it demounts hat frame equipment 20 from multi-head type embroidery sewing equipment SM, a holddown member 52, the movable member 55, and a wire 51 are held to the base frame 30 at a predetermined connection relation.
[0024] The wire connection section 65 on the left-hand side of the movable member 55 has the piece 68 of connection connected with the upper surface section of the level connecting plate 66 which fixes on

the undersurface of the movable member 55 and projects to the front, and a connecting plate 66 possible [movement in the direction of X]. The wire 51 prolonged from the rotation frame 40 to left-hand side is ****(ed) to the left-hand side outside edge 67 along with the connecting-plate 66 bottom, it is crooked to an upper surface side in the shape of U-turn at the outside edge 67, and the edge of a wire 51 is being fixed to fixed part 68c of the upper surface of the piece 68 of connection.

[0025] On the other hand, the wire 51 which the right-hand side wire connection section 70 has the level connecting plate 71 which fixes on the undersurface of the movable member 55 and projects to the front, and is prolonged from the rotation frame 40 to right-hand side is ****(ed) to the right-hand side outside edge 72 along with the connecting-plate 71 bottom, it is crooked to an upper surface side in the shape of U-turn at the outside edge 72, and the edge of a wire 51 is being fixed to fixed part 71a of the upper surface of a connecting plate 71.

[0026] In the wire connection section 65 of the aforementioned left-hand side, the right end portions of the connecting plate 66 projected from the movable member 55 to the anterior and the piece 68 of connection are formed in the flections 66a and 68a crooked upwards. the screw supported by flection 66a -- a member 69 is screwed in flection 68a -- making -- a screw -- tension can be given to a wire 51 if the piece 68 of connection is moved to right-hand side to a connecting plate 66 by rotation of a member 69

[0027] the aforementioned connection mechanism 75 for adjustment is screwed on a holddown member 52 in the state where it inserted in in the direction of X formed in the movable member 55 at one pair of long long holes 77, and each long hole 77 -- having -- the screw with a knob which can conclude the movable member 55 to a holddown member 52 -- it has a member 76 a screw with a knob -- major-diameter shank 76b is formed in the knob 76a bottom of a member 76, and screw section 76c is formed in the major-diameter shank 76b bottom

[0028] a screw -- screw section 76c of a member 76 is made to insert in a long hole 77, and a part for the point is screwed on the holddown member 52 If knob 76a is turned and major-diameter shank 76b is dropped, the movable member 55 will be pinched on the upper surface of a holddown member 52, and the undersurface of major-diameter shank 76b, and the movable member 55 will be concluded to a holddown member 52. If knob 76a is turned and major-diameter shank 76b is raised, conclusion of the movable member 55 to a holddown member 52 is canceled, and the movable member 55 will be in the state which can be displaced relatively in the direction of X to a holddown member 52.

[0029] By the way, long hole 55a long in the direction of X is formed in the direction center section of X of the movable member 55, and datum-line 55b is attached to a part for the long hole 55a order both ends of the upper surface of the movable member 55. Moreover, datum-line 36a is attached also to the upper surface of the flection 36 of a connecting plate 35, and the position where these datum lines 55b and 36b are located in a line on a straight line is set as the expected home position of the rotation frame 40. in this state, it is shown in drawing 4 -- as -- a screw -- screw section 76c of a member 76 is located in the direction center section of X of the long hole 77, and the movable member 55 is connected in the state where it can be displaced relatively to right-and-left both directions to a holddown member 52

[0030] And if the rotation frame 40 is clockwise rotated from the state of drawing 4 after the connection mechanism 75 for adjustment cancels conclusion of the movable member 55 to a holddown member 52 for example, the movable member 55 will move to right-hand side to a holddown member. Thus, moving the movable member 55 which has the wire connection sections 65 and 70 to a holddown member 40 (base frame) in the direction of X, the rotation frame 40 can be rotated and the home position of the rotation frame 40 can be adjusted. In addition, you may rotate the rotation frame 40 by moving the movable member 55 to a holddown member.

[0031] if the connection mechanism 80 is explained briefly -- connection -- a member 81 -- a collar -- the with shaft 82 supports -- having -- the collar -- the upper-limit section of a control lever 83 is supported pivotably possible [rotation] on the with shaft 82 -- having -- a control lever 83 -- operating it -- a collar, if the with shaft 82 is switched to a fixed position the clamp mechanism besides illustration -- a collar -- the with shaft 82 -- a lower part -- moving -- a collar -- flange 82a of the upper-limit section of the with shaft 82 -- connection -- a member 81 -- Y-axis delivery -- it is fixed to a member 28 That is,

the base frame 30 is connected with the cloth conveyance frame 16 through the connection mechanism 80, and a move drive is carried out in the direction of Y with the cloth conveyance frame 16.
[0032] Explanation of the hat frame 90 constitutes the hat frame 90 from presser-foot frame part material 92 fixed to the hat frame main part 91 and this hat frame main part 91 of the letter of a curve with which the rotation frame 40 is equipped free [attachment and detachment] free [attachment and detachment] from an outside on both sides of a hat 100, and a configuration attachment component 93. Beforehand, although the hat frame 90 is equipped with a hat 100 at an external preparation station, where fixed support of the hat frame main part 91 is carried out in that case at a hat frame set frame (illustration abbreviation), the hat frame main part 91 is put and equipped with a hat 100 from the front, where the ******** is developed outside.
[0033] Although press down from the outside of a hat 100, set the frame part material 92, and the connecting fitting 94 of right and left of the presser-foot frame part material 92 is made to engage with the engagement hook 95 which corresponds, respectively and being connected, it is held at the state where the cloth of the transverse-plane section of a hat 100 and a lateral portion on either side stretched by the configuration attachment component 93, at this time. And the rotation frame 40 of hat frame equipment 20 is equipped with the hat frame 90 equipped with the hat 100 after that.
[0034] After equipping the rotation frame 40 with the hat frame 90 which set the hat 100, Since the movable member 55 is connected possible [adjustment of the direction position of X] to the holddown member 52 by the connection mechanism 75 for adjustment when the center of a hat 100 has shifted from the center of the hat frame 90, Moving the movable member 55 which has the wire connection sections 65 and 70 to a holddown member 52 in the direction of X, the rotation frame 40 is rotated and a home position is adjusted.
[0035] So, when equipping multi-head type embroidery sewing equipment SM with two or more hat frame equipments 20 and performing embroidery sewing simultaneously on two or more hats, it sets to each of two or more hat frame equipments 20. Since the home position of the rotation frame 40 to the base frame 30 can be independently adjusted, without moving the cloth conveyance frame 16 even if the center of a hat 100 has shifted from the center of the hat frame 90, it becomes possible to raise embroidery position precision about two or more hats of all.
[0036] One pair of long holes 77 long in the direction of X formed in the movable member 55 in the connection mechanism 75 for adjustment, it screws on a holddown member 52 in the state where it inserted in each long hole 77 -- having -- the screw with a knob which can conclude the movable member 55 to a holddown member 52, since it has a member 76 a screw with a knob -- it becomes possible to cancel simply the conclusion to the holddown member 52 of the movable member 55, to be able to adjust the direction position of X for the movable member 55 easily to a holddown member 52, and to conclude the movable member 55 simply [a holddown member 52] and certainly by the member 76
[0037] The cloth conveyance frame 16 can be moved to the method of the right until the outside edge 67 of the connecting plate 66 of the wire connection section 65 is located near the upper-limit section of the rotation frame 40, for example as shown in drawing 8 , since the wire 51 prolonged from the upper-limit section of the rotation frame 40 was ****(ed) to a rotation frame and the outside edges 67 and 72 of an opposite side along with each wire connection sections 65 and 70 bottom. Moreover, the cloth conveyance frame 16 can be moved to a left until the outside edge 72 of the connecting plate 71 of the wire connection section 70 is located near the upper-limit section of the rotation frame 40. So, the maximum rotation angle of the rotation frame 40 becomes large, and the width of face of the maximum embroidery pattern which can be embroidered also becomes large.
[0038] The wire 51 ****(ed) to the outside edges 67 and 72 of the wire connection sections 65 and 70 Since you made it crooked to an upper surface side in the shape of U-turn at the outside edges 67 and 72 and the both ends of a wire 51 were fixed to the upper surface section of the piece 68 of connection of the wire connection section 65, and the wire connection section 70 upper-surface section A wire 51 can be certainly ****(ed) to the outside edges 67 and 72 along with the wire connection sections 65 and 70 bottom. And since the wire fixed part 65 was constituted possible [grant of tension] on the wire 51, a

synchronous gap of the rotation of the rotation frame 40 to X directional movement of the cloth conveyance frame 16 can be prevented certainly.
[0039] In addition, this invention is not limited to the aforementioned operation form, but various change can be added to the aforementioned operation form in the range which does not deviate from the technical thought of this invention at existing technology and this existing contractor based on technology obvious.
[0040]
[Effect of the Invention] A cloth conveyance frame can be moved to a left or the method of the right until the outside edge of one wire connection section is located near the upper-limit section of a rotation frame, since the wire prolonged from the rotation frame side was ****(ed) to the rotation frame and the outside edge of an opposite side along with each wire connection section bottom according to the hat frame equipment of a claim 1. So, the maximum rotation angle of a rotation frame becomes large, and the width of face of the maximum embroidery pattern which can be embroidered also becomes large. So, it also becomes possible to secure the embroidery field to the conventional hat, to be short in the distance between cylinder beds in multi-head type embroidery sewing equipment, and to attain a miniaturization.
[0041] Although the same effect as a claim 1 is done so according to the hat frame equipment of a claim 2 Since the wire ****(ed) to the outside edge of the aforementioned wire connection section was made crooked to an upper surface side in the shape of U-turn at the outside edge and the edge of the aforementioned wire was fixed to the wire fixed part by the side of the upper surface of the wire connection section The edge of a wire can simply and certainly be fixed to the wire connection section, and, moreover, each wire can be certainly ****(ed) to an outside edge along with the wire connection section bottom.
[0042] according to the hat frame equipment of a claim 3, although the effect of a claim 2 and this appearance is done so, since one wire fixed part of the one aforementioned pair of wire connection sections was constituted possible [grant of tension] on the wire, a synchronous gap of the rotation of a rotation frame to X directional movement of a cloth conveyance frame can be certainly prevented by giving tension to a wire

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the whole multi-head type embroidery equipment perspective diagram concerning the operation gestalt of this invention.
[Drawing 2] It is the perspective diagram of the hat frame equipment (hat **** wearing state) with which multi-head type embroidery equipment is equipped.
[Drawing 3] It is the plan of hat frame equipment.
[Drawing 4] It is the front view of hat frame equipment.
[Drawing 5] It is the side elevation of hat frame equipment.
[Drawing 6] It is the important section expansion perspective diagram of hat frame equipment.
[Drawing 7] It is the front view of hat frame equipment.
[Drawing 8] It is the front view of hat frame equipment.
[Drawing 9] It is the front view of conventional hat frame equipment.
[Description of Notations]
SM Multi-head type embroidery sewing equipment
6 Cylinder Bed
16 Cloth Conveyance Frame
20 Hat Frame Equipment
30 Base Frame
40 Rotation Frame
51 Wire
52 Holddown Member
55 Rotation -- Member
65 70 Wire connection section
67 72 Outside edge
90 Hat Frame

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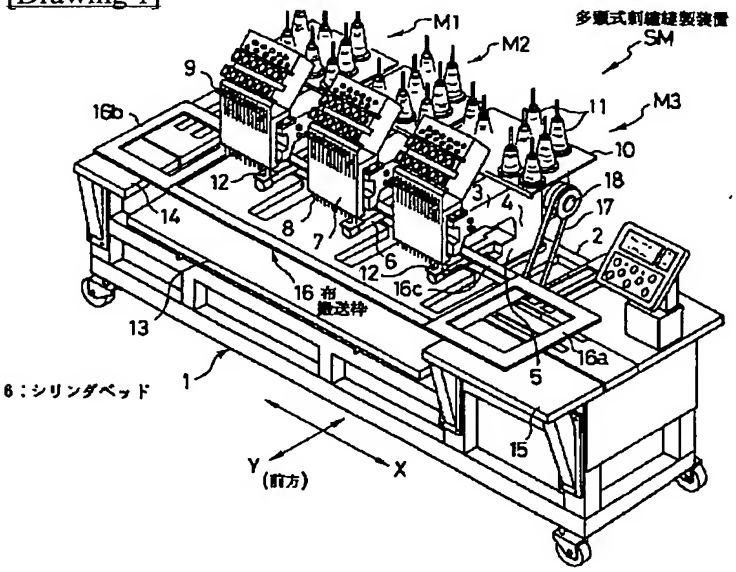
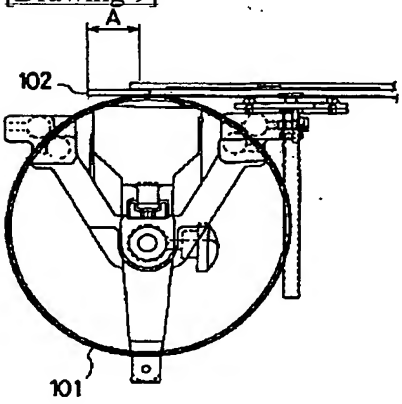
DRAWINGS

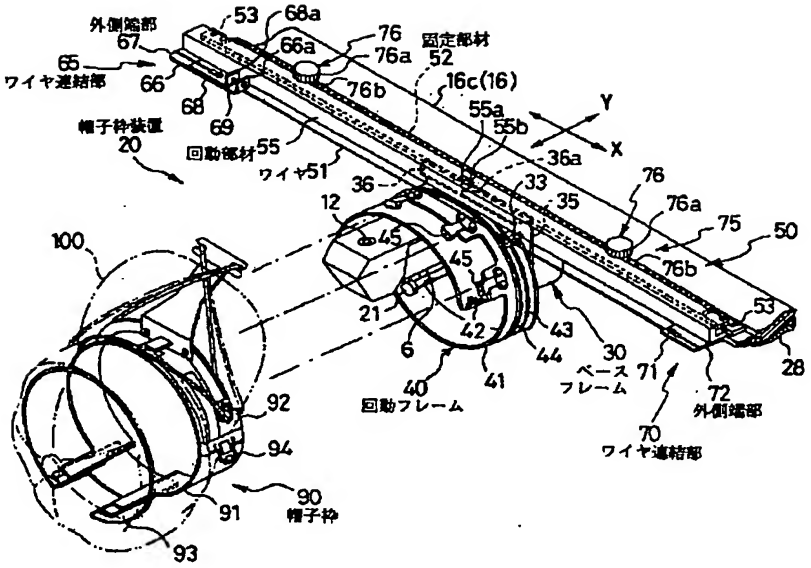
[Drawing 1]



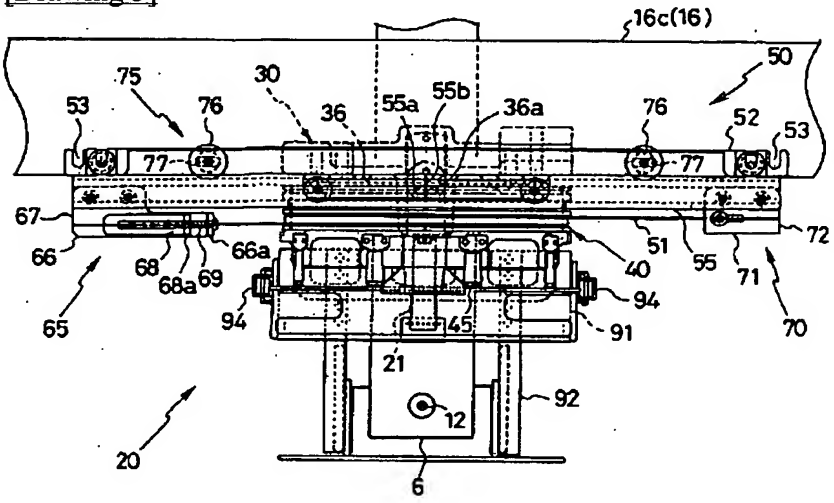
[Drawing 9]



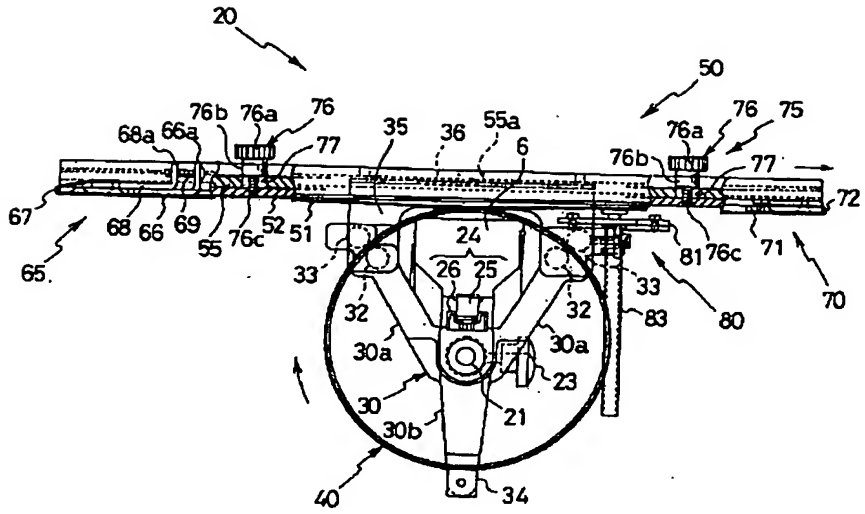
[Drawing 2]



[Drawing 3]



[Drawing 4]



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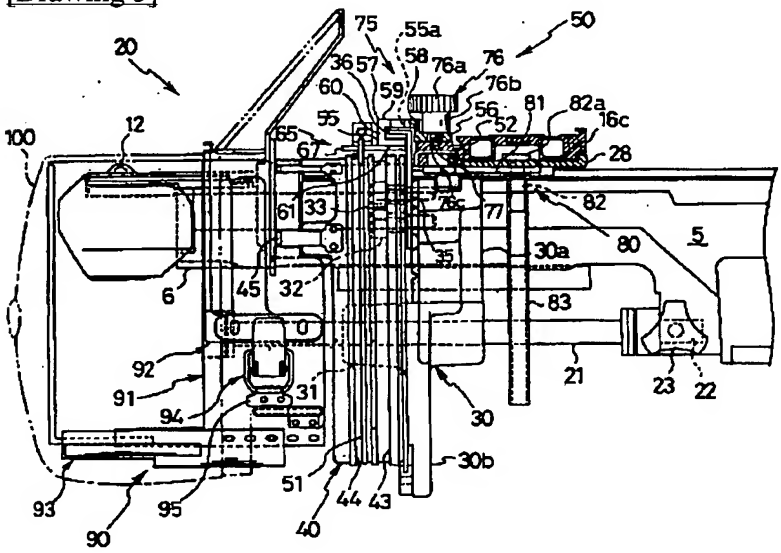

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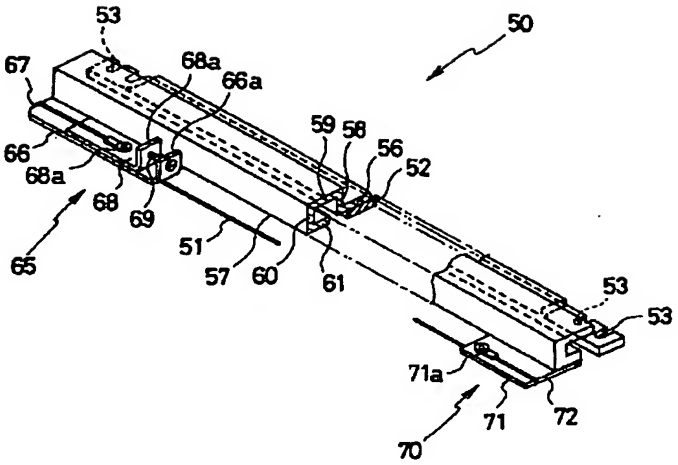

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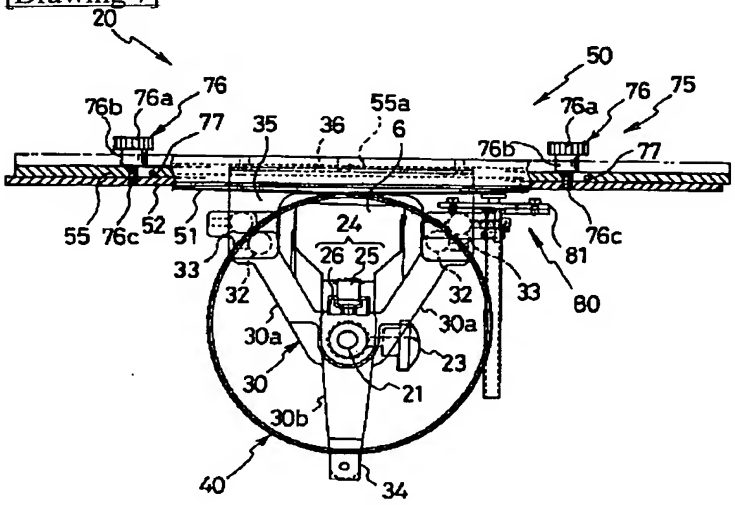

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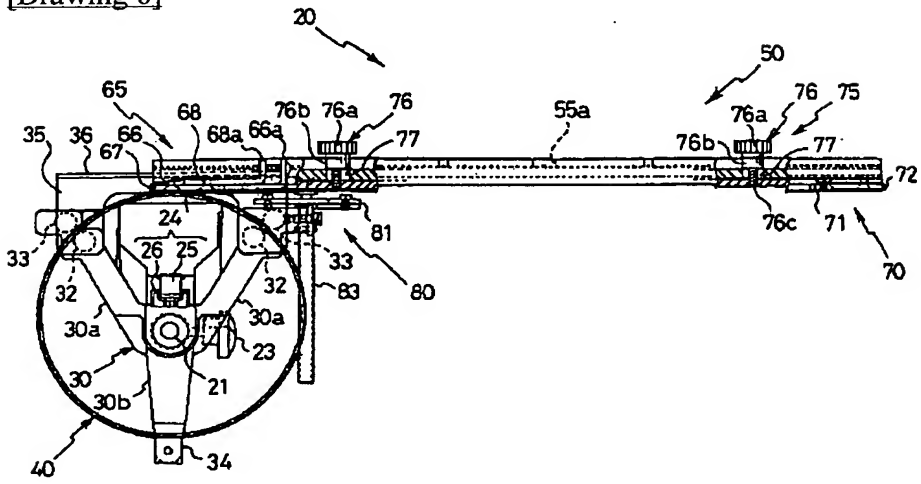

[Translation done.]

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Ｄ０５Ｂ　23/00		Ｄ０５Ｂ　23/00	Ｈ

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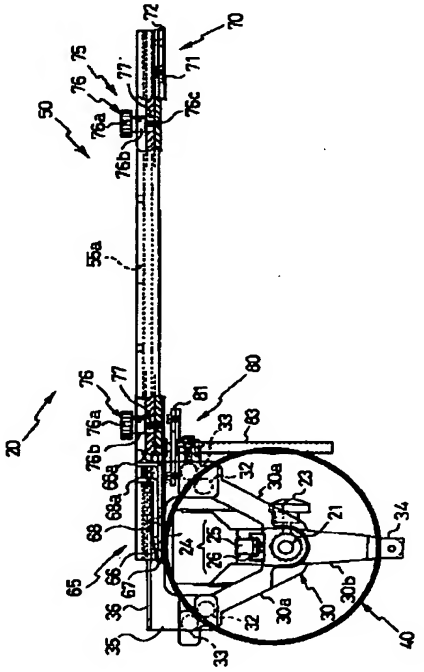
(54)【発明の名称】　帽子枠装置

(57)【要約】

【課題】　回動フレームの最大回動角を大きくすることのできる帽子枠装置を提供する。

【解決手段】　回動フレーム４０側から延びるワイヤ５１は、連結板６６，７０１下側に沿って左側の外側端部６７，７２まで夫々導設され、その外側端部６７，７２でUターン状に上面側へ夫々屈曲されて、ワイヤ５１の両端部が連結片６８の上面の固定部６８ｃと連結板７０の上面の連結部７０ａに夫々固定されている。一方の連結板６６，７１の外側端部６７，７２が回動フレーム６７の上端部付近に位置するまで、布搬送枠１６を左方または右方へ移動させることができるため、回動フレーム４０の最大回動角が大きくなる。



【特許請求の範囲】
【請求項１】　刺繍縫製装置のシリンダベッド付近にシリンダベッドの長さ方向へ移動自在に取付けられるベースフレームと、ベースフレームに回動自在に支持され帽子枠が着脱可能に装着される回動フレームと、回動フレームに巻き付けられたワイヤと、布搬送枠に着脱可能に固定されワイヤの両端部分を夫々連結する１対のワイヤ連結部を両端部に有する連結部材を備えた帽子枠装置において、
前記回動フレーム側から延びたワイヤが、各ワイヤ連結部の下側に沿って回動フレームと反対側の外側端部まで導設されたことを特徴とする帽子枠装置。
【請求項２】　前記ワイヤ連結部の外側端部まで導設されたワイヤは、その外側端部でＵターン状に上面側へ屈曲され、前記ワイヤの端部がワイヤ連結部の上面側のワイヤ固定部に固定されたことを特徴とする請求項１に記載の帽子枠装置。
【請求項３】　前記１対のワイヤ連結部の一方のワイヤ固定部は、ワイヤに張力を付与可能に構成されたことを特徴とする請求項２に記載の帽子枠装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】　本発明は、刺繍縫製装置に装着して帽子に刺繍を施せる帽子枠装置に関し、特に、帽子へ刺繍縫製できる刺繍領域を拡大できるように構成したものに関する。
【０００２】
【従来の技術】　多頭式刺繍縫製装置は、複数の刺繍ミシンと、これら刺繍ミシンのシリンダベッドと直交するＸ方向（左右方向）とＹ方向（前後方向）とに独立に移動駆動される布搬送枠と、この布搬送枠に着脱自在に取付けられ被刺繍布を刺繍縫製可能にセットできる刺繍枠を有する一方、多頭式刺繍縫製装置の複数の刺繍ミシンの各々に着脱可能に装着して、帽子に刺繍を施す為の帽子枠装置が種々実用に供されている。
【０００３】一般的な帽子枠装置は、刺繍ミシンのシリンダベッド付近にＹ方向へ移動自在に取付けられるベースフレームと、ベースフレームにＹ方向と平行な軸回りに回動自在に支持される回動フレームと、回動フレームに着脱自在に装着され帽子を刺繍縫製可能にセットできる帽子枠と、布搬送枠のＸ方向移動を回動フレームの回動に変換する回動機構等で構成されている（例えば、特開平８－２３２１５８号公報参照）。ベースフレームは連結機構を介して布搬送枠に連結され、ベースフレームと回動フレームは布搬送枠とともにＹ方向へ移動駆動される。
【０００４】前記回動機構は、布搬送枠に固定解除可能に固定される左右１対の連結板と、これら両連結板を連結する連結ロッドと、回動フレームに巻き付けられ両端部が前記１対の連結板に夫々連結されたワイヤを有し、布搬送枠とともに１対の連結板がＸ方向へ移動駆動されると、ワイヤが巻き付けられた回動フレームと帽子枠が回動する。回動フレームに巻き付けられたワイヤは、回動フレームの上端部から各連結板へ延び、ワイヤの端部は連結板の下面部にビス等で固定されている。
【０００５】ところで、多頭式刺繍縫製装置に複数の帽子枠装置を装着する場合、多頭式刺繍縫製装置の頭部間距離（シリンダベッド間距離）は所定距離（例えば、約600㎜ ）に設定されているため、各帽子枠装置の１対の連結板は、隣合う帽子枠装置の連結板と干渉しないように布搬送枠に固定される。各帽子枠装置において１対の連結板に固定されたワイヤの両端部の間に回動フレームの上端部が位置する状態で、布搬送枠がＸ方向へ移動駆動され、回動機構を介して回動フレームが回動するが、帽子に刺繍縫製できる刺繍領域の大きさは、回動フレームの最大回動角即ち布搬送枠のＸ方向への移動範囲によって決まる。
【０００６】
【発明が解決しようとする課題】　多頭式刺繍縫製装置に複数の帽子枠装置を装着する場合、各帽子枠装置の１対の連結板の間隔は制限されるが、回動フレームの上端部から延びるワイヤの端部を連結板の上面部の途中部に連結する場合にも、ワイヤの端部を連結板の下面部の途中部に連結する場合にも、ワイヤが連結板の下面側を連結板の回動フレームと反対側の端部まで延びておらず、回動フレームの最大回動角が小さくなる。
【０００７】即ち、図９に示すように、布搬送枠を左方または右方へ移動させていって回動フレーム101 の上端部に一方の連結板102 を最大接近させたとき、回動フレーム101 の上端部から連結板102 の端部までの距離がＡ（Ａは約３～５㎝）だけ残るため、距離Ａ分だけ回動フレーム101 の一方向への最大回動角が小さくなり、刺繍可能な最大刺繍模様の幅が２Ａに相当する分だけ小さくなる。本発明の目的は、回動フレームの最大回動角を大きくすることのできる刺繍枠装置を提供することである。
【０００８】
【課題を解決するための手段】　請求項１の帽子枠装置は、刺繍縫製装置のシリンダベッド付近にシリンダベッドの長さ方向へ移動自在に取付けられるベースフレームと、ベースフレームに回動自在に支持され帽子枠が着脱可能に装着される回動フレームと、回動フレームに巻き付けられたワイヤと、布搬送枠に着脱可能に固定されワイヤの両端部分を夫々連結する１対のワイヤ連結部を両端部に有する連結部材を備えた帽子枠装置において、回動フレーム側から延びたワイヤが、各ワイヤ連結部の下側に沿って回動フレームと反対側の外側端部まで導設されたものである。
【０００９】布搬送枠とともに１対のワイヤ連結部がＸ方向へ移動駆動されると、ワイヤが巻き付けられた回動

フレームが回動する。回動フレーム側から延びたワイヤは、各ワイヤ連結部の下側に沿って回動フレームと反対側の外側端部まで導設されているため、一方のワイヤ連結部の外側端部が回動フレームの上端部近傍に位置するまで、布搬送枠を左方または右方へ移動させることができる。それ故、回動フレームの最大回動角が大きくなり、刺繍可能な最大刺繍模様の幅も大きくなる。

【００１０】請求項２の帽子枠装置は、請求項１の発明において、前記ワイヤ連結部の外側端部まで導設されたワイヤは、その外側端部でＵターン状に上面側へ屈曲され、前記ワイヤの端部がワイヤ連結部の上面側のワイヤ固定部に固定されたことを特徴とするものである。それ故、ワイヤ連結部にワイヤの端部を簡単・確実に固定できるとともに、各ワイヤをワイヤ連結部の下側に沿って外側端部まで確実に導設することができる。その他請求項１と同様の作用を奏する。

【００１１】請求項３の帽子枠装置は、請求項２の発明において、前記１対のワイヤ連結部の一方のワイヤ固定部は、ワイヤに張力を付与可能に構成されたことを特徴とするものである。一方のワイヤ固定部によりワイヤに張力を付与することで、布搬送枠のＸ方向移動に対する回動フレームの回動の同期ずれを確実に防止することができる。その他請求項３と同様の作用を奏する。

【００１２】

【発明の実施の形態】　以下、本発明の実施の形態について図面に基いて説明する。本実施形態は多頭式刺繍縫製装置に着脱可能に装着され複数の帽子を一度に刺繍縫製する複数の帽子枠装置の各々に本発明を適用した場合の例である。図１に示すように、多頭式刺繍装置ＳＭは、Ｘ方向（左右方向）へ延びる刺繍機ベースフレーム１と、刺繍機ベースフレーム１の上面の後部側に配設されたＸ方向へ延びる略矩形状のミシン支持板２を有し、ミシン支持板２上に３台の同一構造の多針式刺繍ミシンＭ１～Ｍ３がＸ方向に並設されている。

【００１３】これら刺繍ミシンＭ１～Ｍ３の各々において、そのアーム部３の前端部には、１２本の針棒と１２個の天秤９とを上下動可能に支持する針棒ケース７が、Ｘ方向へ移動可能に支持されている。一方、アーム部３には脚柱部４が連なり、脚柱部４の下端部に連なるベッド本体部５は、ミシン支持板２上に固定され、ベッド本体部５の前端部からシリンダベッド６が前方に延び、シリンダベッド６の先端部（前端部）には糸輪捕捉器等が設けられている。

【００１４】各針棒ケース７の針棒の下端部には縫針８が取付けられ、１２本の縫針８には糸立台１０の１２個の糸立て１１から１２色の刺繍糸が夫々供給され、針棒ケース７をＸ方向に移動させて、所望の１つの縫針８をシリンダベッド６の先端部の針穴１２に対向する縫製位置に切換えることで針棒の１つが選択されると、その針棒とそれに連結された天秤９のみが上下に駆動され、その針棒の縫針８と糸輪捕捉器との協働により選択された色の刺繍糸で刺繍縫目が形成される。前記針棒や天秤９を上下動させる上軸と糸輪捕捉器を回転させる下軸は、ミシンモータに連結されたＶベルト１７により回転駆動される駆動軸１８により駆動される。

【００１５】ミシン支持板２の前側にはシリンダベッド６の上面と同一高さまで上昇可能な作業用テーブル１３が配設され、作業用テーブル１３の左右両側には１対の補助テーブル１４，１５が設けられ、補助テーブル１４，１５にＸ方向へ長い布搬送枠１６の両端部分の駆動枠部１６ａ，１６ｂが載置支持され、右側の駆動枠部１６ａがＸ方向駆動機構（図示略）によりＸ方向へ移動駆動され、左側の駆動枠部１６ｂと右側の駆動枠部１６ａとがＹ方向駆動機構（図示略）によりＹ方向へ移動駆動される。

【００１６】各刺繍ミシンＭ１～Ｍ３に取付けられる帽子枠装置２０について説明する。図２～図６に示すように、帽子枠装置２０は、布搬送枠１６の下側においてＹ方向へ延びる案内軸２１、案内軸２１にＹ方向へ移動自在に取付けられるベースフレーム３０、ベースフレーム３０の回動を規制する回動規制機構２４、ベースフレーム３０にＹ方向と平行な軸回りに回動自在に支持される回動フレーム４０、回動フレーム４０を回動させる回動機構５０、ベースフレーム３０を布搬送枠１６に作動的に連結する連結機構８０、回動フレーム４０に着脱自在に装着される帽子枠９０等で構成されている。

【００１７】前記案内軸２１は、シリンダベッド６の基端側のベット本体部５に形成されたＹ方向向きの水平な装着穴２２に前方より着脱自在に装着され、固定具２３で固定解除可能にベッド本体部５に固定される。ベースフレーム３０の下部には、案内軸２１に摺動自在に外嵌される枢支筒部３１と、ベースフレーム３０には、正面視Ｙ形をなす３つの腕部３０ａ，３０ａ，３０ｂが設けられ、上側の１対の腕部３０ａの各々の上端部には、回動フレーム４０を内側と外側とから回動自在に支持する１対のローラ部材３２，３３が設けられている。但し、外側のローラ部材３３は、偏心機構を介して、内側のローラ部材３２に対して半径方向へ位置調節可能である。

【００１８】回動規制機構２４について説明すると、シリンダベッド６の下面には、Ｙ方向に延びるキー部材２５が固定され、ベースフレーム３０には、キー部材２５に前後方向に摺動自在に係合してベースフレーム３０の回動を規制する溝形部材２６が固定され、ベースフレーム３０は、Ｙ方向と平行な軸回りに回動しないように規制され、案内軸２１に沿ってＹ方向にのみ移動自在である。

【００１９】回動フレーム４０について説明する。回動フレーム４０には、断面円形の環状部４１と、環状部４１の上半部から前方へ所定長さ延びる断面半円弧状の帽子枠支持部４２とが設けられ、環状部４１の外周部に

は、ローラ部材３３が嵌まって転動するローラ溝４３と、回動機構５０のワイヤ５１を導くワイヤ案内溝４４が形成されている。環状部４１の中央の最下部は、ベースフレーム３０の下側腕部３０ｂの下端のガイド部３４に摺動自在に係合して案内され、環状部４１の外周部には、帽子枠支持部４２に外嵌状に装着される帽子枠９０の係合穴に係合して帽子枠９０を回動フレーム４０に着脱自在に保持する４つの係合ローラ４５が、バネ部材で弾性付勢して設けられている。

【００２０】次に、回動機構５０について説明する。回動機構５０は、布搬送枠１６のＸ方向移動を回動フレーム４０の回動に変換する機構で、回動フレーム４０に巻き付けられたワイヤ５１と、布搬送枠１６に固定解除可能に固定されるＸ方向に細長い固定部材５２と、ベースフレーム３０に対してＸ方向へ相対移動可能であって前記ワイヤ５１の両端部分を夫々連結するワイヤ連結部６５，７０を両端部に有するＸ方向に細長い可動部材５５と、固定部材５２に対して可動部材５５をＸ方向位置を調整可能に連結する調整用連結機構７５等で構成されている。尚、固定部材５２と可動部材５５が連結部材に相当する。

【００２１】固定部材５２のＸ方向両端部の各々には１対の連結穴５３が形成され、固定部材５２の下面をＸ方向枠部１６ｃに当接させた状態で、１対の連結穴５３に挿通させたツマミ付きのネジ部材（図示略）がＸ方向枠部１６ｃに螺着され、固定部材５２がＸ方向枠部１６ｃに締結される。可動部材５５は、固定部材５２に当接する水平板部５６と、水平板部５６の前側に一体的に形成され、ベースフレーム３０に固定された連結板３５の上端屈曲部３６が係合する係合部５７を有する。

【００２２】水平板部５６は固定部材５２よりＸ方向の長さが短く、固定部材５２の前記連結穴５３を形成した両端部分以外に当接している。係合部５７は、水平板部５６の前端部から上方へ延びる鉛直部５８と、鉛直部５８の上端から前方へ延びる上側水平部５９と、上側水平部５９の前端から下方へ延びる鉛直部６０と、鉛直部６０の下端から後方へ延びる下側水平部６１を有する。

【００２３】下側水平部６１は上側水平部５９より短く、下側水平部６１の後端部と固定部材５２及び鉛直部５８の前端部との間に、ベースフレーム３０から上方へ延びる連結板３５が挿入され、連結板３５の上端から前方へ屈曲した屈曲部３６が係合部５７に係合している。それ故、帽子枠装置２０を多頭式刺繍縫製装置ＳＭから取外しても、ベースフレーム３０に対して固定部材５２，可動部材５５，ワイヤ５１が所定の連結関係に保持される。

【００２４】可動部材５５の左側のワイヤ連結部６５は、可動部材５５の下面に固着されて前方へ突出する水平な連結板６６と、連結板６６の上面部にＸ方向へ移動可能に連結された連結片６８を有する。回動フレーム４０から左側へ延びるワイヤ５１は、連結板６６の下側に沿って左側の外側端部６７まで導設され、その外側端部６７でＵターン状に上面側へ屈曲され、ワイヤ５１の端部は連結片６８の上面の固定部６８ｃに固定されている。

【００２５】一方、右側のワイヤ連結部７０は、可動部材５５の下面に固着されて前方へ突出する水平な連結板７１を有し、回動フレーム４０から右側へ延びるワイヤ５１は、連結板７１の下側に沿って右側の外側端部７２まで導設され、その外側端部７２でＵターン状に上面側へ屈曲され、ワイヤ５１の端部は連結板７１の上面の固定部７１ａに固定されている。

【００２６】前記左側のワイヤ連結部６５において、可動部材５５より前側へ突出した連結板６６及び連結片６８の右端部分は上方へ屈曲する屈曲部６６ａ，６８ａに形成され、屈曲部６６ａに支持されたネジ部材６９を屈曲部６８ａに螺合させ、ネジ部材６９の回動により連結板６６に対して連結片６８を右側へ移動させると、ワイヤ５１に張力を付与できるようになっている。

【００２７】前記調整用連結機構７５は、可動部材５５に形成されたＸ方向に長い１対の長孔７７と、各長孔７７に挿通した状態で固定部材５２に螺着され固定部材５２に可動部材５５を締結可能なツマミ付きのネジ部材７６とを有する。ツマミ付きのネジ部材７６のツマミ７６ａの下側には大径軸部７６ｂが形成され、大径軸部７６ｂの下側にネジ部７６ｃが形成されている。

【００２８】ネジ部材７６のネジ部７６ｃを長孔７７に挿通させ、その先端部分が固定部材５２に螺着されている。ツマミ７６ａを回し大径軸部７６ｂを下降させると、固定部材５２の上面と大径軸部７６ｂの下面とで可動部材５５が挟持され、固定部材５２に対して可動部材５５が締結される。ツマミ７６ａを回し大径軸部７６ｂを上昇させると、固定部材５２への可動部材５５の締結が解除され、固定部材５２に対して可動部材５５がＸ方向へ相対移動可能な状態になる。

【００２９】ところで、可動部材５５のＸ方向中央部にはＸ方向に長い長孔５５ａが形成され、可動部材５５の上面の長孔５５ａの前後両端部分には基準線５５ｂがつけられている。また、連結板３５の屈曲部３６の上面にも基準線３６ａがつけられ、これら基準線５５ｂ，３６ｂが一直線上に並ぶ位置が、回動フレーム４０の所期の原点位置に設定されている。この状態では、図４に示すように、ネジ部材７６のネジ部７６ｃが長孔７７のＸ方向中央部に位置しており、可動部材５５は固定部材５２に対して左右両方向へ相対移動し得る状態で連結されている。

【００３０】そして、調整用連結機構７５により固定部材５２への可動部材５５の締結を解除した後、例えば、図４の状態から回動フレーム４０を時計回りに回動させると、固定部材に対して可動部材５５が右側へ移動す

る。このように、固定部材４０（ベースフレーム）に対してワイヤ連結部６５，７０を有する可動部材５５をＸ方向へ移動させながら、回動フレーム４０を回動させて回動フレーム４０の原点位置を調整することができる。尚、固定部材に対して可動部材５５を移動させることで、回動フレーム４０を回動させてもよい。

【００３１】連結機構８０について簡単に説明すると、連結部材８１に鍔付き軸８２が支持され、その鍔付き軸８２に操作レバー８３の上端部が回動可能に枢支され、操作レバー８３を操作して鍔付き軸８２を固定位置に切換えると、図示外のクランプ機構により鍔付き軸８２が下方に移動して、鍔付き軸８２の上端部の鍔部８２ａにより連結部材８１がＹ軸送り部材２８に固定される。つまり、ベースフレーム３０は連結機構８０を介して布搬送枠１６に連結され、布搬送枠１６とともにＹ方向へ移動駆動される。

【００３２】帽子枠９０について説明すると、帽子枠９０は、回動フレーム４０に着脱自在に装着される湾曲状の帽子枠本体９１と、この帽子枠本体９１に帽子１００を挟んで外側から着脱自在に固定される押え枠部材９２と、形状保持部材９３とで構成されている。予め外部の準備ステーションにおいて、帽子枠９０に帽子１００を装着するが、その場合帽子枠本体９１を帽子枠セットフレーム（図示略）に固定支持した状態で、帽子枠本体９１に帽子１００をその汗取り部を外側へ展開した状態で前方より被せて装着する。

【００３３】帽子１００の外側から押え枠部材９２をセットし、押え枠部材９２の左右の連結金具９４を、夫々対応する係合フック９５に係合させて連結するが、このとき、形状保持部材９３により、帽子１００の正面部と左右の側面部の布地が張った状態に保持される。そして、その後、帽子１００を装着した帽子枠９０を帽子枠装置２０の回動フレーム４０に装着する。

【００３４】帽子１００をセットした帽子枠９０を回動フレーム４０に装着した後、帽子１００の中心が帽子枠９０の中心からずれている場合、調整用連結機構７５により可動部材５５は固定部材５２に対してＸ方向位置を調整可能に連結されているため、固定部材５２に対してワイヤ連結部６５，７０を有する可動部材５５をＸ方向へ移動させながら、回動フレーム４０を回動させて原点位置を調整する。

【００３５】それ故、多頭式刺繍縫製装置ＳＭに複数の帽子枠装置２０を装着して、複数の帽子に同時に刺繍縫製を実行する場合、複数の帽子枠装置２０の各々において、帽子１００の中心が帽子枠９０の中心からずれていても、布搬送枠１６を移動させずに、ベースフレーム３０に対する回動フレーム４０の原点位置を独立に調整できるため、複数の帽子全てについて刺繍位置精度を高めることが可能になる。

【００３６】調整用連結機構７５においては、可動部材５５に形成されたＸ方向に長い１対の長孔７７と、各長孔７７に挿通した状態で固定部材５２に螺着され固定部材５２に可動部材５５を締結可能なツマミ付きのネジ部材７６とを有するので、ツマミ付きのネジ部材７６により、可動部材５５の固定部材５２への締結を簡単に解除して、固定部材５２に対して可動部材５５をＸ方向位置を簡単に調整でき、可動部材５５を固定部材５２に簡単・確実に締結することが可能になる。

【００３７】回動フレーム４０の上端部から延びたワイヤ５１を、各ワイヤ連結部６５，７０の下側に沿って回動フレームと反対側の外側端部６７，７２まで導設したので、例えば、図８に示すように、ワイヤ連結部６５の連結板６６の外側端部６７が回動フレーム４０の上端部近傍に位置するまで、布搬送枠１６を右方へ移動させることができる。また、ワイヤ連結部７０の連結板７１の外側端部７２が回動フレーム４０の上端部近傍に位置するまで、布搬送枠１６を左方へ移動させることができる。それ故、回動フレーム４０の最大回動角が大きくなり、刺繍可能な最大刺繍模様の幅も大きくなる。

【００３８】ワイヤ連結部６５，７０の外側端部６７，７２まで導設されたワイヤ５１を、その外側端部６７，７２でＵターン状に上面側へ屈曲させ、ワイヤ５１の両端部をワイヤ連結部６５の連結片６８の上面部とワイヤ連結部７０上面部に固定したので、ワイヤ５１をワイヤ連結部６５，７０の下側に沿って外側端部６７，７２まで確実に導設することができる。そして、ワイヤ固定部６５を、ワイヤ５１に張力を付与可能に構成したので、布搬送枠１６のＸ方向移動に対する回動フレーム４０の回動の同期ずれを確実に防止することができる。

【００３９】尚、本発明は前記実施形態に限定されず、本発明の技術的思想を逸脱しない範囲において、前記実施形態に既存の技術や当業者に自明の技術に基いて種々の変更を加えることもあり得る。

【００４０】

【発明の効果】　請求項１の帽子枠装置によれば、回動フレーム側から延びたワイヤを、各ワイヤ連結部の下側に沿って回動フレームと反対側の外側端部まで導設したので、一方のワイヤ連結部の外側端部が回動フレームの上端部近傍に位置するまで、布搬送枠を左方または右方へ移動させることができる。それ故、回動フレームの最大回動角が大きくなり、刺繍可能な最大刺繍模様の幅も大きくなる。それ故、従来の帽子への刺繍領域を確保して、多頭式刺繍縫製装置においてはシリンダベッド間距離を短くて小型化を図ることも可能になる。

【００４１】請求項２の帽子枠装置によれば、請求項１と同様の効果を奏するが、前記ワイヤ連結部の外側端部まで導設されたワイヤを、その外側端部でＵターン状に上面側へ屈曲させ、前記ワイヤの端部をワイヤ連結部の上面側のワイヤ固定部に固定したので、ワイヤ連結部にワイヤの端部を簡単・確実に固定でき、しかも、各ワイ

ヤをワイヤ連結部の下側に沿って外側端部まで確実に導設することができる。

【００４２】請求項３の帽子枠装置によれば、請求項２と同様の効果を奏するが、前記１対のワイヤ連結部の一方のワイヤ固定部を、ワイヤに張力を付与可能に構成したので、ワイヤに張力を付与することで、布搬送枠のＸ方向移動に対する回動フレームの回動の同期ずれを確実に防止することができる。

【図面の簡単な説明】

【図１】本発明の実施形態に係る多頭式刺繍装置の全体斜視図である。

【図２】多頭式刺繍装置に装着される帽子枠装置（帽子枠未装着状態）の斜視図である。

【図３】帽子枠装置の平面図である。

【図４】帽子枠装置の正面図である。

【図５】帽子枠装置の側面図である。

【図６】帽子枠装置の要部拡大斜視図である。

【図７】帽子枠装置の正面図である。

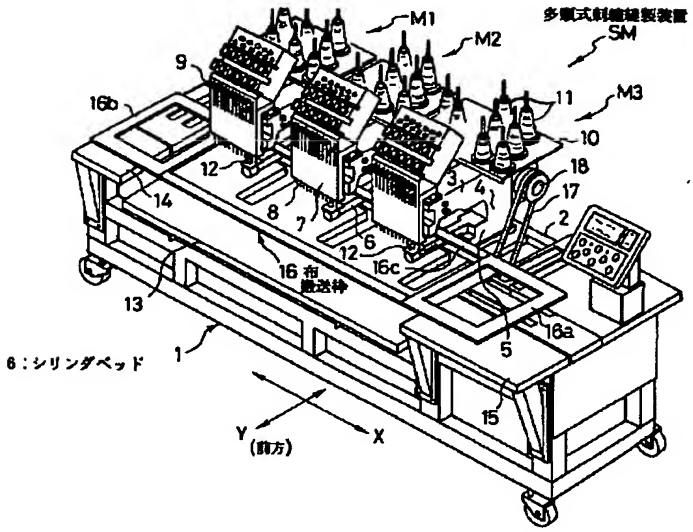
【図８】帽子枠装置の正面図である。

【図９】従来の帽子枠装置の正面図である。

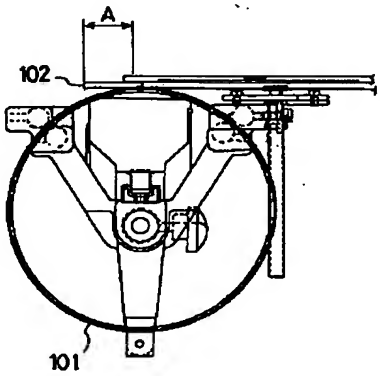
【符号の説明】

ＳＭ	多頭式刺繍縫製装置
６	シリンダベッド
１６	布搬送枠
２０	帽子枠装置
３０	ベースフレーム
４０	回動フレーム
５１	ワイヤ
５２	固定部材
５５	回動部材
６５，７０	ワイヤ連結部
６７，７２	外側端部
９０	帽子枠

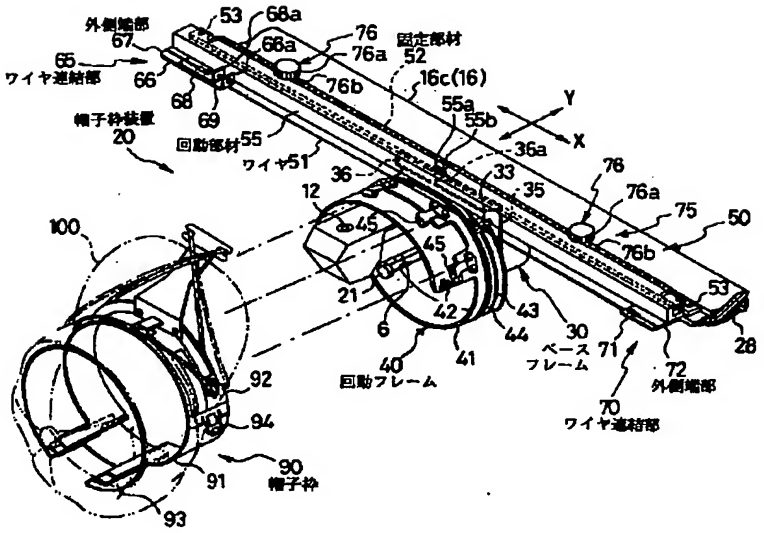
【図１】



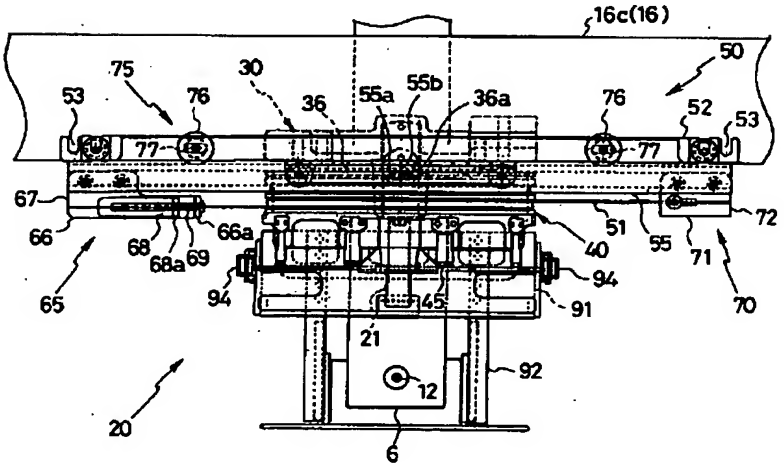
【図９】



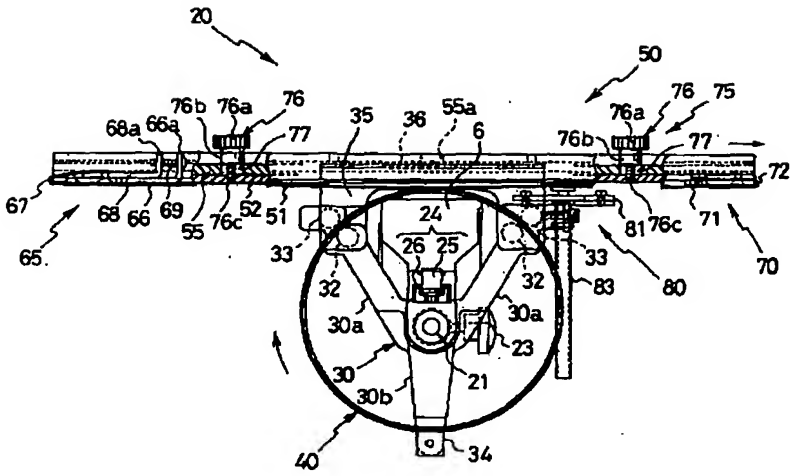
【図２】


外側端部
67
53
68a
66a
76
76a
固定部材
52
65
ワイヤ連結部
66
68
69
16c(16)
55a
55b
Y
X
帽子枠装置
20
回動部材
55
ワイヤ
51
36a
36
33
35
76
76a
75
50
12
45
76b
53
100
45
21
42
43
6
44
30
ベース
フレーム
71
28
40
回動フレーム
41
72
外側端部
92
70
ワイヤ連結部
94
90
帽子枠
91
93

【図３】


16c(16)
50
75
30
53
76
36
55a
55b
36a
76
52
53
77
77
67
72
66
66a
51
68
68a
69
40
55
71
65
94
94
45
91
70
21
92
12
20
6

【図４】


20
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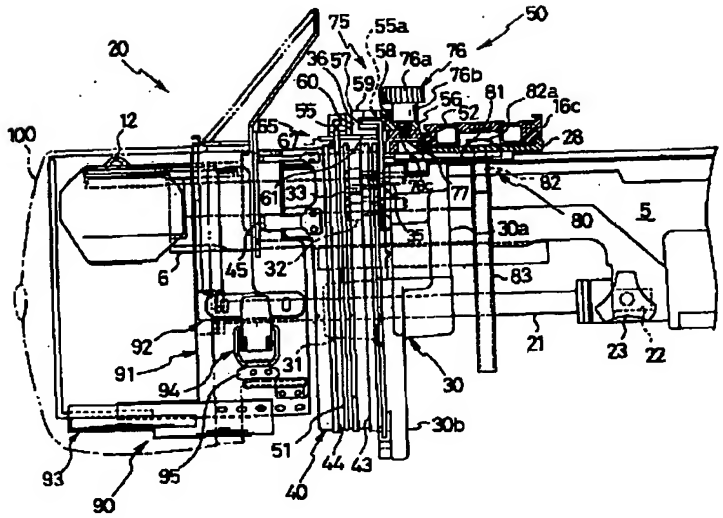
76b
76a
76
68a
66a
77
35
36
55a
6
76b
76a
76
75
77
72
67
68
66
69
55
76c
52
51
24
26
25
33
81
76c
71
65
32
30a
30
30b
21
23
83
80
70
40
34

【図５】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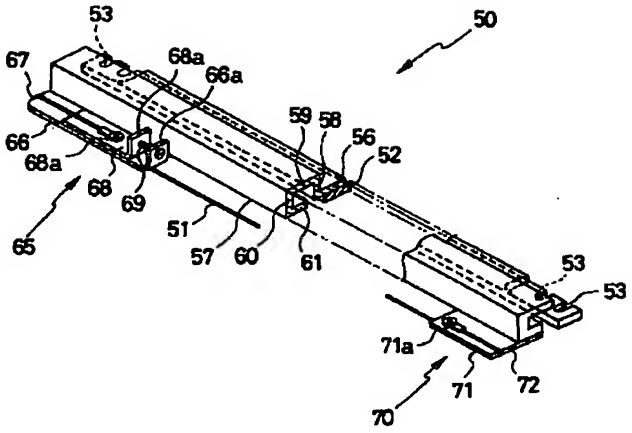
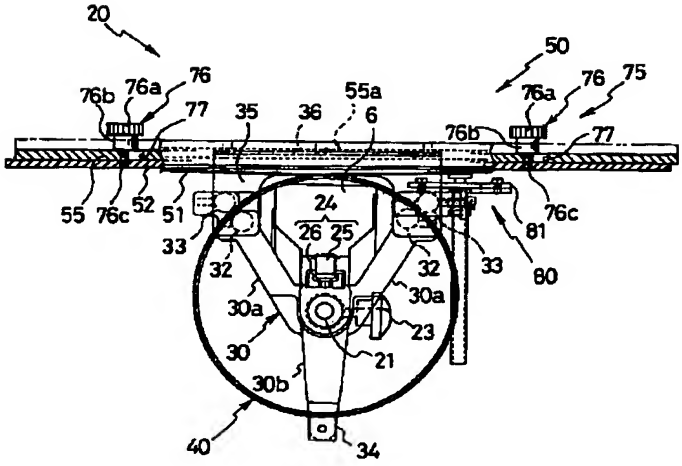
75
55a
50
36
57
58
76a
76
76b
60
59
56
81
82a
16c
52
55
12
100
67
28
61
33
77
82
80
5
35
30a
6
45
32
83
92
91
94
31
21
23
22
30
30b
51
44
43
40
93
90
95

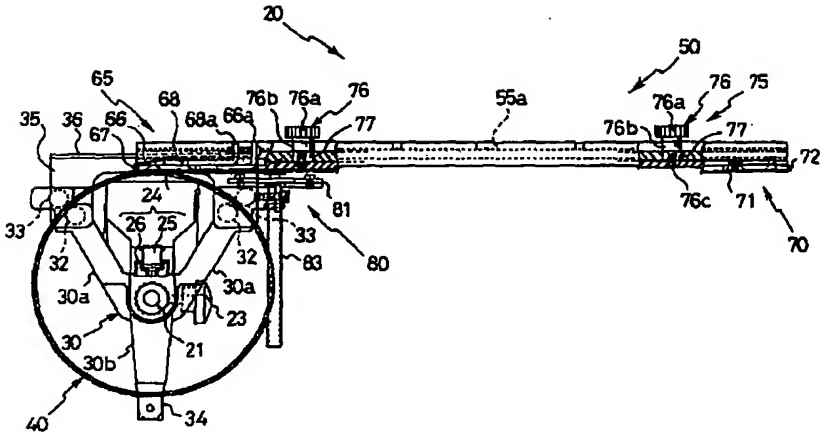
【図６】


53
50
67
68a
66a
59
58
56
52
66
68a
68
69
65
51
57
60
61
53
53
71a
71
72
70

【図７】


20
50
76
76b
76a
77
35
36
55a
6
76
75
76a
76b
77
55
76c
52
51
24
26
25
33
32
32
33
76c
81
80
30a
30a
23
30
21
30b
40
34

【図8】


20
50
65
68
76b
76a
76
55a
76a
76
75
35
36
66
68a
66a
77
76b
77
67
72
24
81
76c
71
33
26
25
33
70
32
32
83
80
30a
30a
23
30
21
30b
40
34